white on the tail, and the underparts of the body of a dull white. It has only one alar bar. The specimen in question was obtained by Dr. Maack in the valley of the Amoor.

In conclusion, there appears to be no doubt that all the above-mentioned species are descended from one parent stock, *Lanius excubitor* or *Lanius borealis*, probably the latter, as *L. excubitor* shows a tendency to cast back towards *L. borealis*. They may be treated either as permanent varieties or subspecies, or else as fairly good species though closely allied and to some extent connected by intermediate links. But in the present case, as the characteristics are fairly definable, I deem it expedient to adopt the last alternative.

I do not give any table of measurements, as I find on examination that they do not yield any practical result.

XXXII.—*Remarks on the Palæarctic White-breasted Dippers.*

By H. E. Dresser, F.L.S., F.Z.S.

Twenty-five years have elapsed since Mr. Salvin's excellent article on the genus *Cinclus* was published in this journal, and eighteen since I wrote the article on *Cinclus aquaticus* in the 'Birds of Europe' and gave a short review of its allies. It is also now more than ten years since vol. vi. of the British Museum 'Catalogue of Birds,' containing the *Cinclidæ*, was issued. During this period, as may well be imagined, much more information on the subject has been published and a much larger material for the discussion of the question is now available. I have lately been examining as large a series of Dippers as I could get together, and the result is that I have to some extent modified the views I held eighteen years ago. It may therefore be of interest to ornithologists if I place on record what further information I have been able to glean on the subject, and report progress up to date.

The Dipper is essentially a non-migratory species, and unless driven out by stress of weather does not appear at any time to wander far from its usual range, which is, as a rule, confined to mountainous districts and to places where there is swift-running water. In the mountains the Dipper usually spends the summer months at considerable altitudes, and only forsakes these, its breeding-haunts, to pass the winter at some lower altitude near the foot of the same mountain-range. Thus, as may be taken for granted, isolation has caused the group to be split up and subdivided into several "local forms" or "subspecies," whichever naturalists may choose to term them. These forms have become permanently distinct, though the differences are but slight, and in a large series intermediate forms are usually found; but all the facts point to the various forms having descended from one parent stock. It is not my intention to propound abstruse hypotheses, nor to conjure up a few glacial epochs to account for the distribution of these various forms; but I will merely state briefly the facts as they have come under my own observation. I may, however, go so far as to say that it appears to me most probable that *Cinclus melanogaster* (or *Cinclus cinclus*, as Dr. Sharpe prefers to call this form) is the parent stock from which all the various forms of White-breasted Dipper (including even *Cinclus leucogaster*) have descended.

Cinclus melanogaster is the most boreal of all the group; for throughout the whole of Scandinavia, and probably also the whole of Northern Russia in Europe, this form alone is found. I have examined numerous specimens from various parts of Scandinavia and one from North Russia (from Mudjuga, 40 miles north of Archangel). All of these agree very closely *inter se.* During severe winters, when driven from its usual haunts by stress of weather, this form has been met with, though rarely, on the coasts of England, in Heligoland, on the coasts of Holland and Belgium, and also, as I am informed by Mr. E. Hartert, in Northern Germany.

Dr. R. Bowdler Sharpe (Cat. B. Brit. Mus. vi. p. 309) calls in question my statement that *C. melanogaster* has occurred in Ireland, and adds that an examination of the specimens referred to by me shows that the birds so named "are only young birds of the year of the ordinary *Cinclus aquaticus* after their first moult, at which time they are hardly to be distinguished from *Cinclus cinclus*." To this contradiction, however, I must demur, as I have before me the only Irish specimen I have ever examined, obtained by Mr. H. Blake Knox. This is certainly not a young bird, and is undistinguishable from specimens from Sweden.

In Great Britain the predominant form, and, indeed, the only one, except in the case of rare stragglers to the east coast, is *Cinclus aquaticus*, and, as Dr. R. Bowdler Sharpe remarks, English specimens are much the finest in colour on the underparts. I have examined many English specimens of this form, but have never had an opportunity of examining a British-killed specimen (except the one from Ireland) of *C. melanogaster*, which is occasionally met with on the east coasts of England. *Cinclus aquaticus* is also found in France, Belgium, Holland, and probably throughout the whole of Northern Germany; but I have had only scant opportunities of confirming this by an examination of specimens from different parts of northern continental Europe. I have, however, examined specimens from the Rhine Provinces and from Galicia.

In the Pyrenees another local form of *Cinclus* occurs, which approaches more nearly to *C. melanogaster* than to *C. aquaticus*, and differs from the former in having a shorter wing, while the upper parts, especially the head and neck, are of a paler brown, but this brown extends over about the same area as in *C. melanogaster*. Moreover, the black on the underparts is paler and more brown in tinge, and lacks the red tinge of *C. aquaticus*. This bird is, in fact, a pale form of *Cinclus melanogaster*; and by those who elect to differentiate and name every form, however slightly differing, it may be distinguished as *Cinclus melanogaster pyrenaicus*.

Of this form I have examined specimens from Eaux Chaudes in the Basses Pyrénées and from Gèdre in the Hautes Pyrénées in the collections of Canon Tristram and Mr. J. Backhouse. In Switzerland, Savoy, Piedmont, and Southern Europe as far east as Greece and Turkey, another form is found (*Cinclus albicollis*), which differs from *Cinclus aquaticus* in having the upper parts paler and the breast of a much brighter rufous, this colour extending on to the abdomen. Specimens of this form from Greece approach somewhat to *Cinclus kashmiriensis.* An adult male in my collection from Olympus has the upper parts as in *C. albicollis,* but the underparts are darker and less rufescent, the rufous colour being of a darker shade than in *C. albicollis.* But, though to some extent intermediate between the two forms, this form approaches much more nearly to *C. albicollis.* An adult female from Olympus and a young bird from Mount Parnassus, however, are similar to *C. albicollis* from Piedmont, but are a trifle less rufous on the underparts.

I am indebted to Mr. J. Whitehead for the loan of his specimen of the Dipper from Corsica. This bird has the upper parts similar to a specimen in my own collection from Piedmont, but is rather less red on the abdomen, which is somewhat paler and browner than that of the bird from Piedmont; the flanks also are, if anything, rather greyer in tinge of colour.

I have examined only one specimen of the Dipper from North Africa, the type of Canon Tristram's *Cinclus minor.* This specimen somewhat resembles the Pyrenean bird, but is a trifle more rufous on the underparts, having a rather narrow band of dull rufous bordering the white. It is to some extent intermediate between that form and the bird from Corsica.

Specimens from Asia Minor are referable to *Cinclus kashmiriensis,* but differ somewhat from the type in having the brown on the back extending only to the interscapulary region—thus further down than in *Cinclus melanogaster* and *C. aquaticus,* but not so far down as in examples from further east. Examples from the Taurus mountains have the abdomen rather paler but not rufous, and in some of them the brown on the back extends but little beyond the hind neck. A specimen from Erzeroom, however, has the breast darker, nearly as dark as in some specimens of *Cinclus melanogaster.* Examples from Persia agree fairly well with the bird from Erzeroom. In Palestine, however, one finds a form (*C. rufiventris,* Hempr. & Ehr., *fide* Tristram, Faun. & Flor. Palest. p. 51) which has the abdomen rufous brown, somewhat similar to the Corsican bird, but the brown on the upper parts extends to the interscapulary region, as in *C. kashmiriensis.*

I have also before me a specimen obtained by Mr. C. G. Danford at Osmanzeeh, Asia Minor, which has the abdomen strongly tinged with dull rufous brown and is intermediate between the specimen from Palestine and those obtained by Mr. Danford in the Taurus mountains, but the brown on the upper parts extends nearly to the centre of the dorsal region.

Cinclus kashmiriensis is subject to a good deal of variation, although these variations are but slight. I have been able to examine a considerable series, and find that as a rule the further east one goes the more brown there is on the upper parts. As above stated, in some of the birds from the Taurus range the brown does not extend far below the hind neck, the rest of the upper parts being marked with the characteristic semilunar markings. The type of the species, which is from Kashmir, has the underparts somewhat pale and brownish in tinge, and the brown on the upper parts extends rather far down, the semilunar markings on the rest of the upper parts being rather more indistinct than in most of the specimens I have examined. Examples from Sikkim, Ladakh, Yarkand, and the Yangtze have the lower underparts rather dark, there being an absence of rufous in the tinge of colour, and the flanks are not very grey. But one specimen in Canon Tristram's collection, obtained by Col. Prjevalsky in Kan-su, has the underparts very dark, quite as black as in any specimen of *C. melanogaster*, and there is very little grey on the flanks. The upper parts are also as in *C. melanogaster*, but the brown goes further down, extending over all the interscapulary region. Another specimen, from Transcaspia, a not quite adult bird, as there are a few white tips to the feathers on the abdomen, has a tinge of brownish rufous on the dark portion of the underparts.

Mr. Salvin states (Ibis, 1867, p. 117) that *C. kashmiriensis* has the feathers on the lower back black with grey margins, instead of grey with black margins as in *C. aquaticus*, and has the spurious primary longer than that of any specimens of the European races; but after a careful comparison of a large series I am unable to confirm these statements.

In Siberia, more especially in the Baikal district, there are two forms of Dipper. One of them is *C. leucogaster*, which has the white on the underparts extending down to the vent. The other, which may be distinguished as subsp. *baicalensis*, has the dark colour on the underparts extending as far as in *Cinclus kashmiriensis*, but differs from that form as much as that form does from *C. melanogaster* and *C. aquaticus*. It has the head and neck paler, the colour of these and the rest of the upper parts being of a peculiar velvety mouse-brown, the head and neck being rather paler than the back, and the entire upper parts down to the lower rump being brown, there being only a few indistinct semilunar markings on the lower rump and upper tail-coverts; the dark portion of the underparts is of a dull dark earthy brown without any trace of rufous.

In the series of Baikal specimens which I have examined I find every intermediate stage between these two forms—from subsp. *baicalensis* to a specimen of *C. leucogaster* in my own collection, which has the underparts as white and the head and neck as pale as in any specimen of *C. leucogaster* from Turkestan.

I am indebted to Mr. Seebohm for an opportunity of examining a large series of Dippers from Siberia, chiefly from Krasnoyarsk, in his collection. All of these are identical with the dark-bellied form from Lake Baikal. Taczanowski, in his recently published posthumous work (Faun. Orn. Sib. Orient. p. 211), recognizes only one species of White-bellied Dipper in Siberia—*Cinclus leucogaster*; but he refers to specimens with the abdomen dark, such as I describe above, and considers them as intermediate forms between *C. kashmiriensis* and *C. leucogaster*. He also states that he has examined specimens that are intermediate between that form and *Cinclus sordidus*, but I have never had an opportunity of examining a specimen of this variety.

The white-bellied form (*Cinclus leucogaster*) inhabits Turkestan, Mongolia, and the countries north of Kashmir, ranging into the Baikal district. I do not find that in the Altai or in Turkestan it intergrades with *Cinclus kashmiriensis*, but, as above stated, in the Baikal district typical specimens of *C. leucogaster* are comparatively speaking rare, though I

Subsp.		Culmen.	Wing.	Tail.	Tarsus.
		inch.	inches.	inches.	inch.
melanogaster	Sweden	0·91—0·93	3·45—3·6	2·3 —2·35	1·13—1·25
	N. Russia	0·9	3·7	2·35	1·1
aquaticus	Great Britain	0·85—0·9	3·25—3·5	2·2 —2·45	1·15—1·25
	Galicia	0·82—0·85	3·3 —3·6	2·1 —2·3	1·05—1·1
pyrenaicus	Pyrenees	0·85—0·95	3·1 —3·4		
minor	Algeria	0·85	3·2	2·0	1·15
albicollis	Piedmont	0·9 —0·95	3·35 —3·45	2·3 —2·4	1·15—1·27
	Greece	0·85—0·9	3·2 —3·3	2·0 —2·2	1·15—1·17
	Corsica	0·85	3·3	2·0	1·15
rufiventris	Lebanon	0·87	3·15	2·1	1·15
kashmiriensis	Elburz Mts.	0·82	3·45—3·5	2·35—2·4	1·1
	Tehran	0·87	3·5 —3·55	2·4	1·2 —1·3
	Taurus	0·80—0·85	3·25—3·45	2·05—2·1	1·1 —1·15
	Asia Minor	0·9	3·6	2·1	1·2
	Transcaspia	0·85	3·6	2·1	1·15
	Yarkand	0·8 —0·85	3·7 —3·9	2·35—2·5	1·2 —1·25
	Sikkim	0·85—0·9	3·45—3·5	1·8 —2·1	1·0 —1·1
	Ganssu	0·9	3·8	2·35	1·25
baicalensis	Lake Baikal	0·8 —0·9	3·2 —3·6	2·0 —2·1	1·1 —1·15
leucogaster	Altai	0·9	3·25	2·2	1·1
	Turkestan	0·9	3·7 —3·85	2·4 —2·5	1·2 —1·25
	Mongolia	0·9	3·6	2·25	1·2
	Lake Baikal	0·8 —0·85	3·25—3·3	2·0 —2·05	1·15—1·2

have examined some which do not in the least differ from examples from Turkestan. This form has the underparts white down to the vent, except the flanks, which are brown; while the upper parts are as in the Baikal dark-bellied form, but the head and nape are much lighter, in some old specimens these parts being light whity-brown.

In conclusion, it appears to me that all the above-mentioned Dippers may be considered as slightly modified forms of the same species, or may with equal justice be treated as very closely allied species; but I am inclined to favour the former view.

The measurements of the various forms do not differ very much, as will be seen from the table on page 386.

XXXIII.—*On the Gallinaceous Genera* Bambusicola *and* Arboricola. By W. R. OGILVIE GRANT.

(Plate IX.)

THIS paper contains a short review of all the known species of the above-named genera, and gives a brief synonymy of them, showing the various combinations of names, generic and specific, which have been used by different authors. It also gives references to all the good figures. Keys to the species and their geographical distribution are added, and numerous notes.

The number of tail-feathers in the various groups of Gallinæ is a very useful generic character when taken in conjunction with others: it varies enormously in the different genera. For instance, in *Excalfactoria* the minimum number (8) of tail-feathers is found; in *Coturnix* there are 10–12, in *Rhizothera* 12, in *Francolinus*, as well as in *Bambusicola* and *Arboricola*, 14, in *Perdix* 16–18, in *Tetraophasis* 18, in *Tetraogallus* 20–22, and so on. These numbers are quite constant, as I have ascertained by examining a large number of specimens of nearly every species. The number of tail-feathers can be accurately ascertained only by lifting up the upper tail-coverts, so as to expose the bases of the rectrices. When this is done there is usually no difficulty in counting the